

AMENDMENTS TO THE CLAIMS

1. A method for organizing and presenting material content on a display to a viewer, the method comprising:
mapping a plurality of display windows within a virtual three-dimensional space so that each display window is allocated a specific and predetermined position in the space,
rendering each display window in three-dimensional perspective according to its position and angle relative to a viewer's virtual position in the virtual space,
cross-referencing the position of each display window to a storage location of the material content that is designated to be rendered in that particular display window at a particular time based on at least one predetermined condition,
allocating at least part of the three-dimensional virtual space to display windows whose content is not chosen or determined by the viewer,
selecting, retrieving and preparing material content for possible subsequent display, according to a predetermined algorithm,
selecting and rendering prepared material content within its cross- referenced display window, according to a predetermined algorithm,
providing a means of virtual navigation that changes the viewer's position in the space in such a manner as to simulate movement through a plurality of predefined channels in the virtual space;
wherein the virtual space is initially rendered such that the viewer is positioned at one of a number of predetermined points of entry into the virtual space.
2. A method according to claim 1 wherein the display windows are positioned in the three-dimensional virtual space in such a manner as visually to represent exterior surfaces of three-dimensional objects.
3. A method according to claim 1 wherein a three-dimensional virtual universe comprises at least two three-dimensional virtual spaces.

4. A method according to claim 3 wherein at least two of the virtual spaces are connected.
5. A method according to claim 1 wherein the material content comprises any one of HTML pages, XML pages, multimedia presentations, VRML, data, numbers, text, still images such as photographs or graphics, moving images, holograms, virtual control panels and sound files.
6. (Currently amended) A method according to claim 1 wherein each display window comprises one of a parallelogram, an ellipse, a scroll, a curved concave and/or convex surface, a polygon ~~with straight and/or curved sides~~, a polyhedron ~~with straight and/or curved edges~~, an elliptical solid, and an empty or amorphous space.
7. A method according to claim 1 wherein each unique position of a display window is identified by numerical coordinates.
8. A method according to claim 7 wherein the numerical coordinates refer to axes within the space.
9. A method according to claim 1 wherein at least some of the material content is retrieved from a network.
10. A method according to claim 1 wherein the retrieving step comprises retrieving at least some of the content from a local or remote storage medium.
11. A method according to claim 1, further comprising providing an interaction means that enables the viewer to interact with the material content in at least one of the display windows.

12. A method according to claim 11 wherein the interaction with material content occurs while the material content remains in situ in its cross referenced display window within the three-dimensional virtual space.
13. A method according to claim 11 wherein the interaction with material content occurs by displaying the material content other than in situ in its cross referenced display window.
14. A method according to claim 1 wherein the predetermined condition for cross referencing comprises receiving financial consideration from a real commercial concern.
15. A method according to claim 1 wherein a part of the three-dimensional virtual space comprises cross-referenced content material that is mainly determined by the viewer.
16. A method according to claim 1 wherein the channels may be straight, curved, round or irregular.
17. A method according to claim 1 wherein at least some of the channels are arranged in a grid-like pattern.
18. A method according to claim 1 wherein the three-dimensional virtual space is a representation of a geographical landscape.
19. A method according to claim 18 wherein the geographical landscape is an urban landscape.
20. A method according to claim 19 wherein the urban landscape is a visual representation of a town or city, the channels are visual representations of roads, and at least one of the display windows is a visual representation of a retail shop window arranged on either side of a road.

21. A method according to claim 19 wherein the town or city is an actual town or city that exists or did exist in the physical world.
22. A method according to claim 1 wherein the three-dimensional virtual space is a visual representation of the inside of a department store and the channels are visual representations of aisles in the store and the display windows are visual representations of shop floor displays in the store.
23. A method according to claim 1 wherein the three-dimensional virtual space is a visual representation of the inside of a supermarket and the channels are visual representations of aisles in the supermarket and the display windows are visual representations of shelves in the supermarket.
24. A method according to claim 1 wherein the three-dimensional virtual space is a visual representation of the inside of a shopping mall and the channels are visual representations of walkways in the shopping mall and the display windows are visual representations of the shop-fronts in the mall.
25. A method according to claim 1 wherein the three-dimensional virtual space is a visual representation of the inside of a library and the channels are visual representations of aisles in the library and the display windows are visual representations of library shelves.
26. A method according to claim 1 wherein the three-dimensional virtual space contains at least one navigational reference object at a predetermined position.
27. A method according to claim 26 wherein the navigational reference object comprises any one of a gateway, landmark, ambient condition and advertisement.
28. A method according to claim 1 wherein the height of virtual three-dimensional structures in the three-dimensional space is varied to aid navigation.

29. A method according to claim 27 wherein the advertisement is rendered in a way similar to the material content of a display window and is specified by an actual commercial enterprise or other organization or entity in exchange for actual financial payments.
30. A method according to claim 1 ~~whereby~~ wherein sets of material content, associated by one or more characteristics, are cross referenced to display windows that are spatially grouped together in the three-dimensional virtual space.
31. A method according to claim 1 ~~whereby~~ wherein the designation of material content for rendering in a display window at a particular position at a particular time is conditional upon one or more of the following: the number, behavior and/or nature of viewers who navigate to or near that position in the three-dimensional virtual space; the nature of material content in other display windows near that position; the availability of the display window at the selected position; restrictions on the type of material content being cross referenced; other requirements.
32. A method according to claim 1 wherein the viewer is prevented from navigating into a restricted area of the three-dimensional space unless the viewer fits a certain profile or fulfills certain predetermined conditions.
33. (Canceled)
34. A method according to claim 33 wherein the point of entry is the viewer's destination after leaving another three-dimensional virtual space.
35. A method according to claim 1 comprising providing a first system for rapid viewer movement through the three-dimensional virtual space wherein there are predetermined start and stop positions, so as to simulate travel via an underground railway, an over-ground railway, or an elevated railway or cable-car.

36. A method according to claim 1 comprising providing a second system for rapid viewer movement through the three-dimensional virtual space wherein the viewer can determine the locations for starting and stopping, so as to simulate travel via a taxi or helicopter.
37. A method according to claim 35 or claim 36 wherein the viewer can simulate movement through the three-dimension virtual space only by the first or second system for rapid viewer movement and via the channels and cannot transfer from one position to another position other than by these mechanisms.
38. A method according to claim 1 comprising displaying to the viewer the three-dimensional virtual space from an elevated perspective looking downwards at an angle from a simulated height or a bird's-eye perspective looking directly downwards from a simulated height.
39. A method according to claim 1 comprising displaying the layout of the three-dimensional virtual space on a two-dimensional or three-dimensional topological map.
40. A method according to claim 39 wherein the map highlights any one or more of the following: the predetermined points of entry into the three dimensional virtual space, the fixed start and stop locations of the rapid viewer movement mechanisms, and navigational reference objects.
41. A method according to claim 1 in which the predetermined algorithm for rendering (or for the preparation for rendering) of material content for the display windows in the three-dimensional virtual space comprises the dynamic selection of a subset of the display windows, rendering their cross-referenced material content to memory, and then copying the rendered material content into their designated display windows.

- 42. A method according to claim 41 further comprising identifying a current position and navigation direction of the viewer and using said position and said direction as an input to the algorithm for selecting the subset of display windows to be rendered to memory.
- 43. A method according to claim 41 further comprising recording one or more movements and speed of the viewer and using said movements and speed as an input to the algorithm for selecting the subset of display windows to be rendered to memory.
- 44. A method according to claim 41 comprising recording all or part of a history of viewer activities and using this data as an input to the algorithm for the purposes of selecting the subset of display windows to be rendered to memory.
- 45. A method according to claim 41 comprising the recording of the last modification date and time of rendered material content and using this data as an input to the algorithm for the purposes of selecting the subset of display windows to be rendered to memory.
- 46. A method according to claim 41 ~~whereby~~ wherein the updating of display windows with animated or interactive material content which are out of view or far from the viewer, but which the algorithm determines are soon likely to be in view and near to the viewer, are put temporarily into a suspended state so that the animation or interactivity can be rapidly resumed when needed.
- 47. A method according to claim 1 and claim 41 comprising limiting or suspending computer resources allocated to the rendering of a subset of display windows to memory whenever the viewer's position is changing.
- 48. (Currently amended) A method according to claim 1, claim 41 and claim 47 ~~whereby~~ wherein priority is given to display windows with material content that is less computer-resource intensive, so that these display windows are more likely to be selected as part of

the subset of display windows to be rendered to memory, are more likely to remain part of the subset, and are allocated more computer resources while part of the subset.

49. A method according to claim 1 comprising a two part security key to protect the integrity of the cross references for a particular virtual space, wherein the public key is provided to the viewer in order to decrypt the cross references that have been encrypted with the private key.
50. A method according to claim 49, wherein the cross references are signed with the private key and the public key is provided to the viewer in order to verify the authenticity of the cross reference signature.
51. A method according to claim 1, further comprising recording for subsequent access by the viewer, the display window position and/or network address or storage location of material content chosen by the viewer.
52. A method according to claim 1, further comprising recording and/or storing data about the position, simulated movements and interactions executed by the viewer.
53. A method according to claim 1 and claim 52 comprising the storage of data representative of the movements and interactions executed by viewers, the collation of this data from multiple viewers, and the representation of the data in a graphical format.
54. A method according to claim 53 wherein the graphical format is a contour map.
55. Apparatus for organizing and presenting material content on a display to a viewer, the apparatus comprising:
a display,

means for mapping a plurality of display windows within a three-dimensional virtual space so that each display window is allocated a specific and predetermined position,

means for rendering each display window in three-dimensional perspective according to its position and angle relative to the viewer's position in the virtual space,

means for cross referencing the position of each display window to the network address or storage location of the material content that is designated to be rendered in that particular display window at a particular time based on at least one predetermined condition,

means for selecting, retrieving and preparing material content for possible subsequent display, according to a predetermined algorithm,

means for selecting and rendering prepared material content within its cross-referenced display window, according to a predetermined algorithm,

means for navigation controlled by the viewer that changes the viewer's position in such a manner as to simulate movement through a plurality of predefined channels in the virtual space;

wherein the virtual space is initially rendered such that the viewer is positioned at one of a number of predetermined points of entry into the virtual space.

56. Apparatus according to claim 55 further comprising interaction means to enable the viewer to interact with the material content displayed in at least one of the display windows.
57. Apparatus according to claim 55 wherein the navigation means is adapted to change the viewer's position at different rates, simulating movement at different speeds through the three-dimensional virtual space.

58.-62. (Canceled)

63. Apparatus according to claim 55, further comprising means for allocating fixed numerical coordinates to each unique position of a display window in order to specify its location in the virtual space.
64. Apparatus according to claim 55 wherein the display comprises any one of a computer screen, a television screen, a screen attached to or part of a games console, a personal digital assistant screen, a cell phone display, a projection, a pair of projection spectacles, a cerebral implant display, a pair of virtual reality spectacles, and other digital display mechanisms.
65. Apparatus according to claim 55, further comprising interaction means to enable the viewer to interact with the material content displayed in at least one of the display windows.
66. Apparatus according to claim 65 wherein the interaction means comprises at least one of a computer keyboard, a mouse, a joystick, a game pad, a games console controller, virtual reality gloves, a trackpad, a trackball, a cerebral implant, an eye movement detection device, a motion detection device, and a touchscreen.
67. Apparatus according to claim 55 wherein the navigation means comprises any one or more of a computer keyboard, a mouse, a joystick, a game pad, a games console controller, virtual reality gloves, a trackpad, a trackball, a cerebral implant, an eye movement detection device, a motion detection device, and a touchscreen.
68. A browser for organizing and presenting material content on a display to a viewer, comprising one or more stored sequences of instructions which, when executed by one or more processors, cause the one or more processors to perform the steps of:
mapping a plurality of display windows within a virtual three-dimensional space so that
each display window is allocated a specific and predetermined position in the
space,

rendering each display window in three-dimensional perspective according to its position and angle relative to a viewer's virtual position in the virtual space,
cross-referencing the position of each display window to a network address or storage location of the material content that is designated to be rendered in that particular display window at a particular time based on at least one predetermined condition,
allocating at least part of the three-dimensional virtual space to display windows whose content is not chosen or determined by the viewer,
selecting, retrieving and preparing material content for possible subsequent display, according to a predetermined algorithm,
selecting and rendering prepared material content within its cross-referenced display window, according to a predetermined algorithm,
providing a means of virtual navigation that changes the viewer's position in the space in such a manner as to simulate movement through a plurality of predefined channels in the virtual space;
wherein the virtual space is initially rendered such that the viewer is positioned at one of a number of predetermined points of entry into the virtual space.

69. A browser according to claim 68 in which the viewer is not able to edit the cross-references.
70. A browser according to claim 68 in which the viewer is not able to alter the position of display windows in the virtual space.
71. A browser according to claim 68 comprising a first part adapted to run at high priority to control the display of a virtual three-dimensional space, and a second part, adapted to run at a lower priority, which controls the updating of material content in display windows.
- 72.-81. (Canceled)

82. A method according to claim 1 comprising utilizing the three-dimensional virtual space to enable: Internet browsing, virtual stores, virtual supermarkets, virtual shopping malls, virtual retail catalogues, knowledge management, virtual exhibitions, medical records management, virtual hospital patient management, virtual galleries, virtual museums, entertainment choices, tourist guides, TV guides, news digests, travel/hospitality option guides, virtual trade fairs and photo libraries.
83. A method according in claim 1, wherein at least some of the material content itself comprises one or more three-dimensional virtual objects or spaces.
84. (New) A browser according to claim 68 wherein priority is given to display windows with material content that is less computer-resource intensive, so that these display windows are more likely to be selected as part of the subset of display windows to be rendered to memory, are more likely to remain part of the subset, and are allocated more computer resources while part of the subset.
85. (New) Apparatus according to claim 55 wherein priority is given to display windows with material content that is less computer-resource intensive, so that these display windows are more likely to be selected as part of the subset of display windows to be rendered to memory, are more likely to remain part of the subset, and are allocated more computer resources while part of the subset.